





16. A method of creating a depth map including the steps of:
- assigning a depth to at least one pixel or portion of an image;
  - determining x,y coordinates and image characteristics for each said at least one pixel or portion of said image;
  - utilising said depth(s), image characteristics and respective x,y coordinates to determine a first algorithm to ascertain depth characteristics as a function of x,y coordinates and image characteristics;
  - utilising said first algorithm to calculate a depth characteristic for each pixel or portion of said image;
- wherein said depth characteristics form a depth map for said image.

17. A method as claimed in claim 16, wherein said image characteristics include RGB values.

18. A method as claimed in claim 16 further including the step of reassigning a depth to any pixel or portion of said image to correct for any inconsistencies.

19. A method as claimed in claim 16, wherein said image characteristics include at least one of luminance, chrominance, contrast or spatial measurements.

20. A method as claimed in claim 16, wherein said first algorithm may be represented by the equation:

$$z = f(x,y,R,G,B)$$

where x and y define the relative location of a sample.

21. A method as claimed in claim 16, wherein a learning algorithm is utilised to determine the configuration of said first algorithm.

22. A method as claimed in claim 21, wherein for each pixel in the image, the learning algorithm computes:

$$Z_n = k_a \cdot X_n + k_b \cdot Y_n + k_c \cdot R_n + k_d \cdot G_n + k_e \cdot B_n$$

where

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$n$  is the  $n$ th pixel in the key-frame image

$z_n$  is the value of the depth assigned to the pixel at  $x_n, y_n$

$k_a$  to  $k_r$  are constants and are determined by the algorithm

$R_n$  is the value of the Red component of the pixel at  $x_n, y_n$

$G_n$  is the value of the Green component of the pixel at  $x_n, y_n$

$B_n$  is the value of the Blue component of the pixel at  $x_n, y_n$

23. A method as claimed in claim 21, wherein a random component is introduced to the learning algorithm to reduce over-training.

24. A method as claimed in claim 23, wherein said random component is a small positive or negative random number.

25. A method as claimed in claim 21, wherein said learning algorithm initially identifies pixels having similar characteristics to a known pixel.

26. A method as claimed in claim 25, wherein similar pixels are searched for within a search radius.

27. A method as claimed in claim 26, wherein said search radius varies for each characteristic.

28. A method as claimed in of claim 25, wherein the depth of a pixel is determined by a weighted average of distances from similar pixels.

29. A method as claimed in claim 28, wherein weights are inversely proportioned to distance.

30. A method as claimed in claim 21, wherein each characteristic is divided or partitioned into a set of regions and a depth value assigned based on the region which is occupied.

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$z_n$  is the value of the depth assigned to the pixel at  $x_n, y_n$

$k_a$  to  $k_t$  are constants previously determined by the algorithm

$R_n$  is the value of the Red component of the pixel at  $x_n, y_n$

$G_n$  is the value of the Green component of the pixel at  $x_n, y_n$

$B_n$  is the value of the Blue component of the pixel at  $x_n, y_n$

$T$  is a measurement of time, for this particular frame in the sequence.

50. A method of creating a series of depth maps for an image sequence including the steps of:

selecting at least one key frame from said image sequence;

for each at least one key frame assigning a depth to at least one pixel or portion of each frame;

determining relative location and image characteristics for each said at least one pixel or portion of each said key frame;

utilising said depth(s), image characteristics and respective relative location for each said at least one key frame to determine a first configuration of a first algorithm for each said at least one frame to ascertain depth characteristics as a function of relative location and depth characteristics;

utilising said first algorithm to calculate depth characteristics for each pixel or portion of each said at least one key frame;

wherein said depth characteristics form a depth map for each said at least one key frame.

utilising each depth map to determine a second configuration of a second algorithm to ascertain the depth characteristics for each frame as a function of relative location and image characteristics;

utilising said second algorithm to create respective depth maps for each frame of said image sequence.

51. A method as claimed in claim 50, wherein frames adjacent said key frames are processed prior to non-adjacent frames.

52. A method as claimed in claim 51, wherein following processing adjacent frames are considered as key frames for further processing.

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53. A method of encoding a series of frames including transmitting at least one mapping function together with said frames, wherein said mapping function includes an algorithm to ascertain depth characteristics as a function of relative location and image characteristics.

54. A method as claim in claim 53, wherein said image characteristics include RGB values.

55. A method as claimed in claim 53, wherein said image characteristics include at least one of luminance, chrominance, contrast or spatial measurements.

56. A method as claimed in claim 53, wherein a learning algorithm is utilised to determine said mapping function.

57. A method as claimed in claim 56, wherein said learning algorithm is one of back propagation algorithm, C4.5 algorithm, or K-means algorithm.

58. A method as claimed in claim 56, wherein said mapping function computes:

$$Z_n = k_a \cdot x_n + k_b \cdot y_n + k_c \cdot R_n + k_d \cdot G_n + k_e \cdot B_n$$

where

$n$  is the  $n$ th pixel in the key-frame image

$z_n$  is the value of the depth assigned to the pixel at  $x_n, y_n$

$k_a$  to  $k_e$  are constants and are determined by the algorithm

$R_n$  is the value of the Red component of the pixel at  $x_n, y_n$

$G_n$  is the value of the Green component of the pixel at  $x_n, y_n$

$B_n$  is the value of the Blue component of the pixel at  $x_n, y_n$

59. A method as claimed in claim 53, wherein additional algorithms are created for each pair of frames for which depth maps have been received.

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